



Intelligent Water Networks and Watershed Management

DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY



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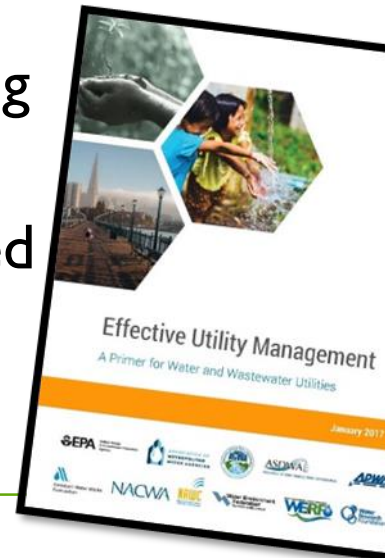
February 13, 2018

 @MatthewRies



Effective Utility Management (EUM) Key Operational Context Shifts (2008→2016)

- 1. Accelerated Adoption of Automated and “Smart” Systems and Data Integration
- 2. Enhanced Customer Expectations and Public Awareness
- 3. Growing Climate Variability and Extremes
- 4. Expanded Challenges Associated with Employee Recruitment and Retention
- 5. Increased Focus on Resource Recovery
- 6. Continued Regulatory Requirements and Operating Condition Changes
- 7. Greater Consideration of Stormwater & Watershed Management



Sustainable US Urban Utilities

Practices

- Asset management
- Education & communication
- Financial management
- Green infrastructure
- Habitat/watershed protection
- Long-term resource plan
- Resource recovery
- Water conservation

Attributes

- Board support/political will
- Flexible staff
- Innovative culture
- Leadership
- Organizational commitment
- Staff training/development



American Water Works
Association



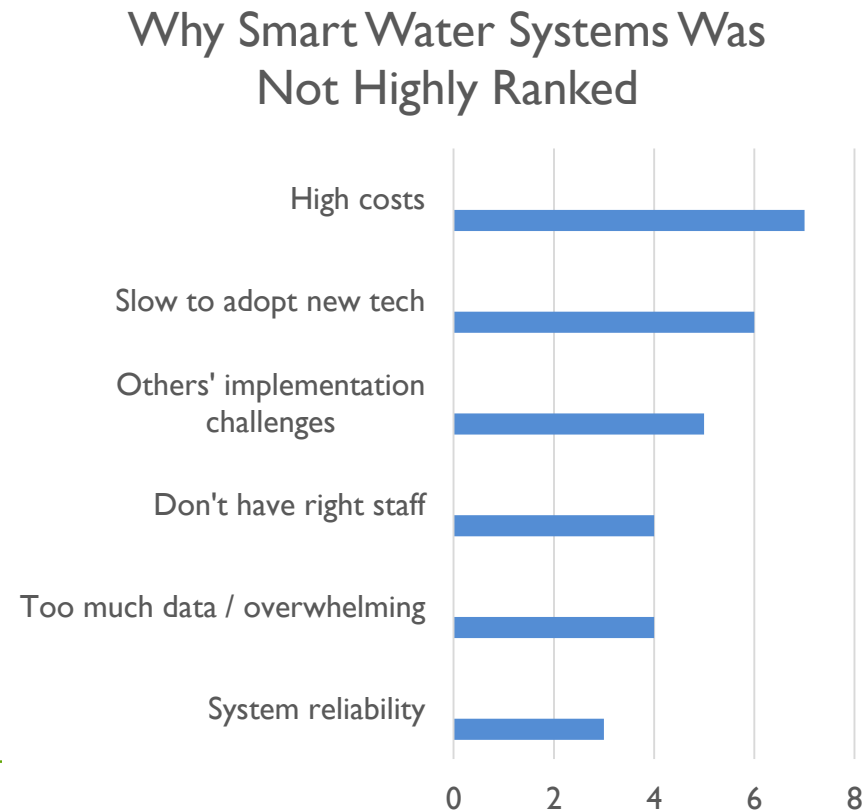
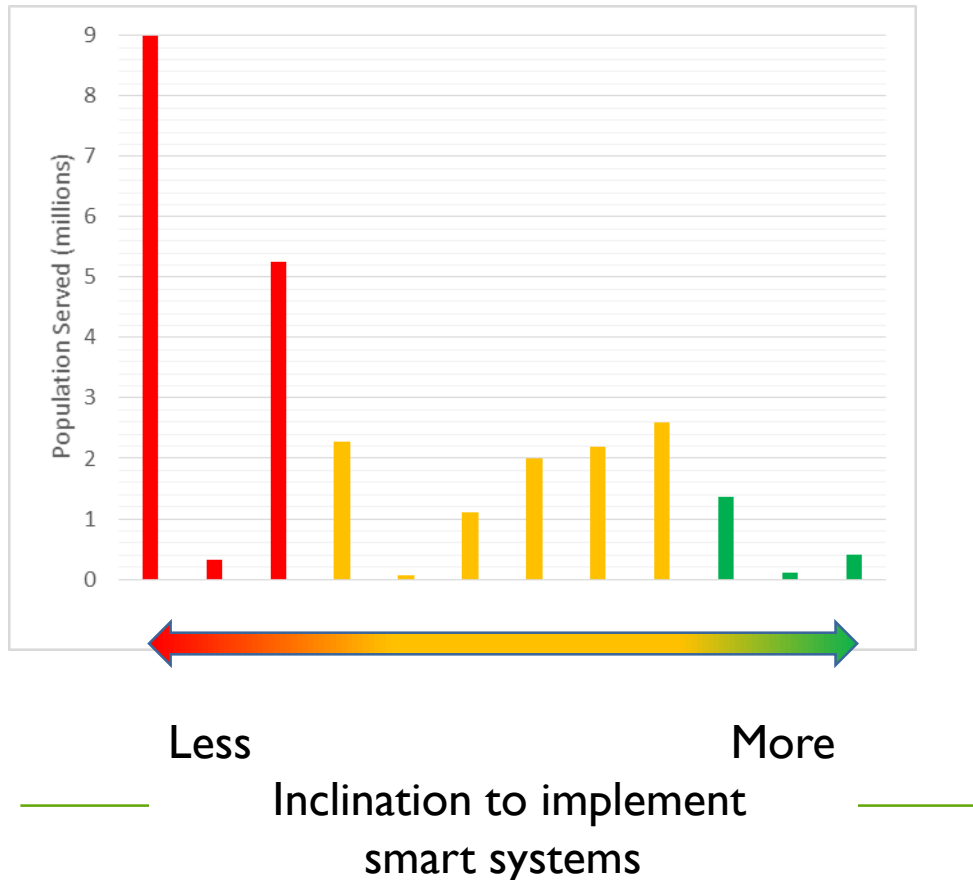
Water Environment
Federation
the water quality people®

<http://scholarcommons.usf.edu/etd/6367/>



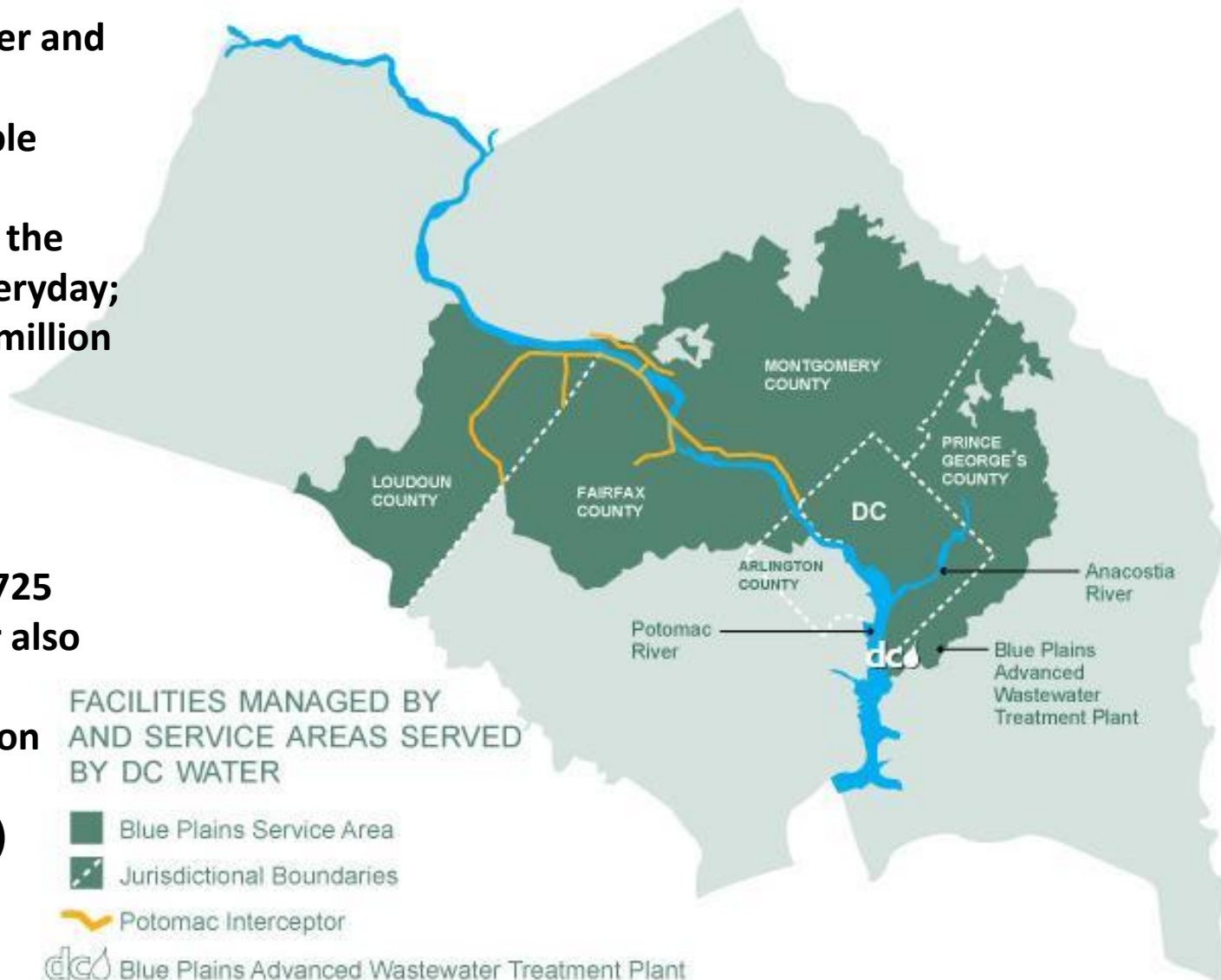
Sustainable Utility Leaders & Smart Water Systems

- Do you believe the adoption of smart water systems is an important practice for sustainable water utilities?
- Do you have an opinion as to why this practice wasn't highly ranked in the 2015 interviews and surveys?



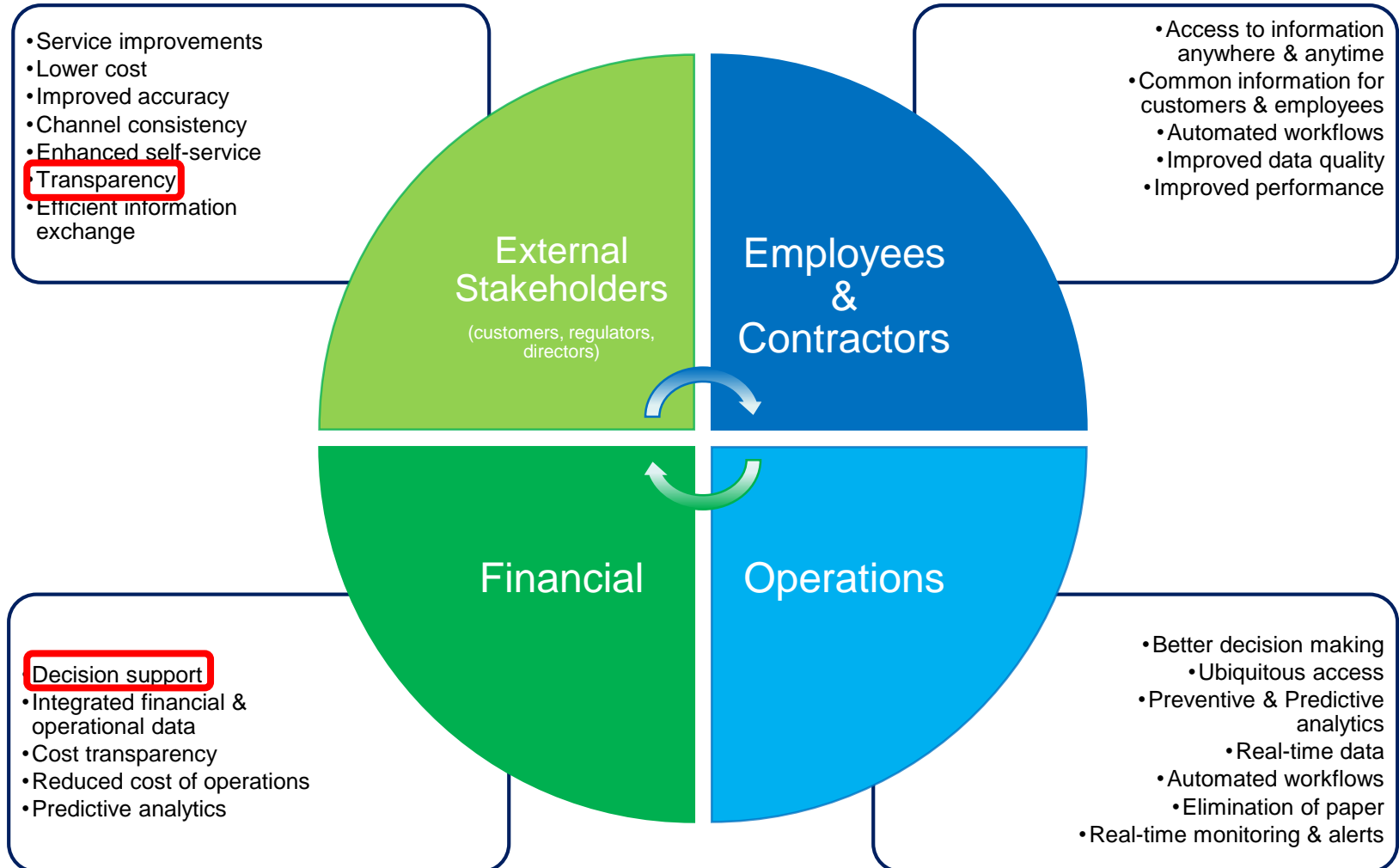
DC Water provides water and wastewater services to almost 1.4 million people (680,000 residents and 700,000 commuters) in the District of Columbia everyday; in addition to the 17.8 million visitors the Capital City receives each year.

With a total service area of approximately 725 square miles, DC Water also treats wastewater for approximately 1.6 million people in neighboring Jurisdictions (MD & VA)



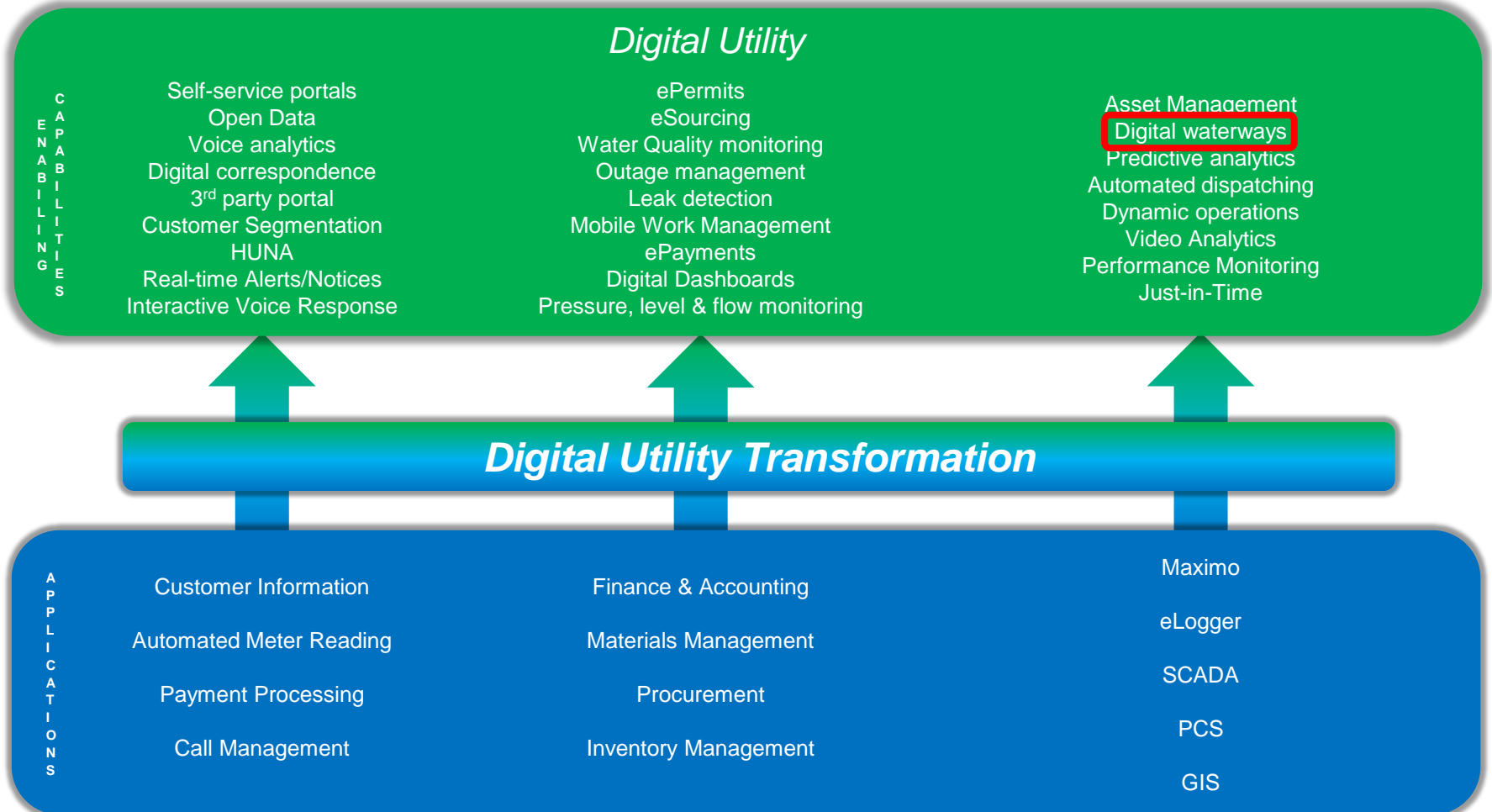
Benefits of the Digital Utility

An effective **Digital Utility** strategy has positive impacts across a range of stakeholders and processes both internal and external.



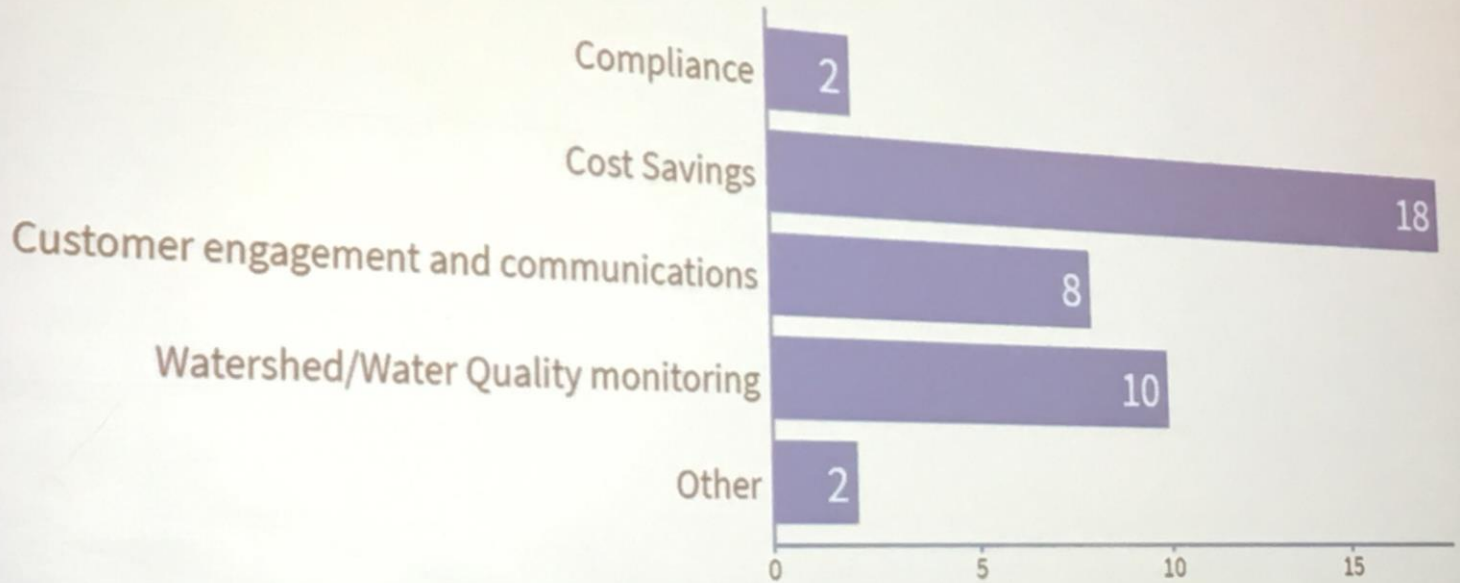
The Digital Profile

The **Digital Utility** is characterized by enabling capabilities that allow for proactive management of all aspects of the business. The **Digital Utility** thinks in the terms of a Systems View rather than a single application or transactional requirement. The lines of source systems blur for the **Digital Utility** as the focus shifts from collecting data to applying knowledge.



What is the biggest opportunity for your utility when looking to incorporate big data, advanced technology?

Respond at [Pollevo.com/nacwa](https://www.pollevo.com/nacwa)



Total Results: 40

1910
meter
reading



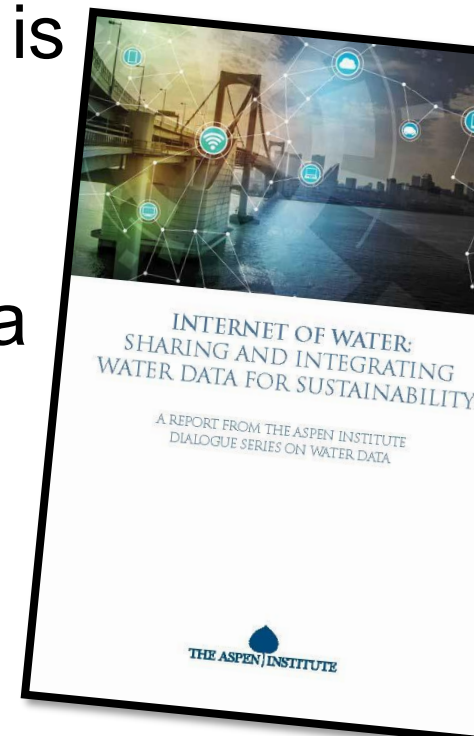
AMR → AMI

WRRF

Stormwater → Watershed

Findings:

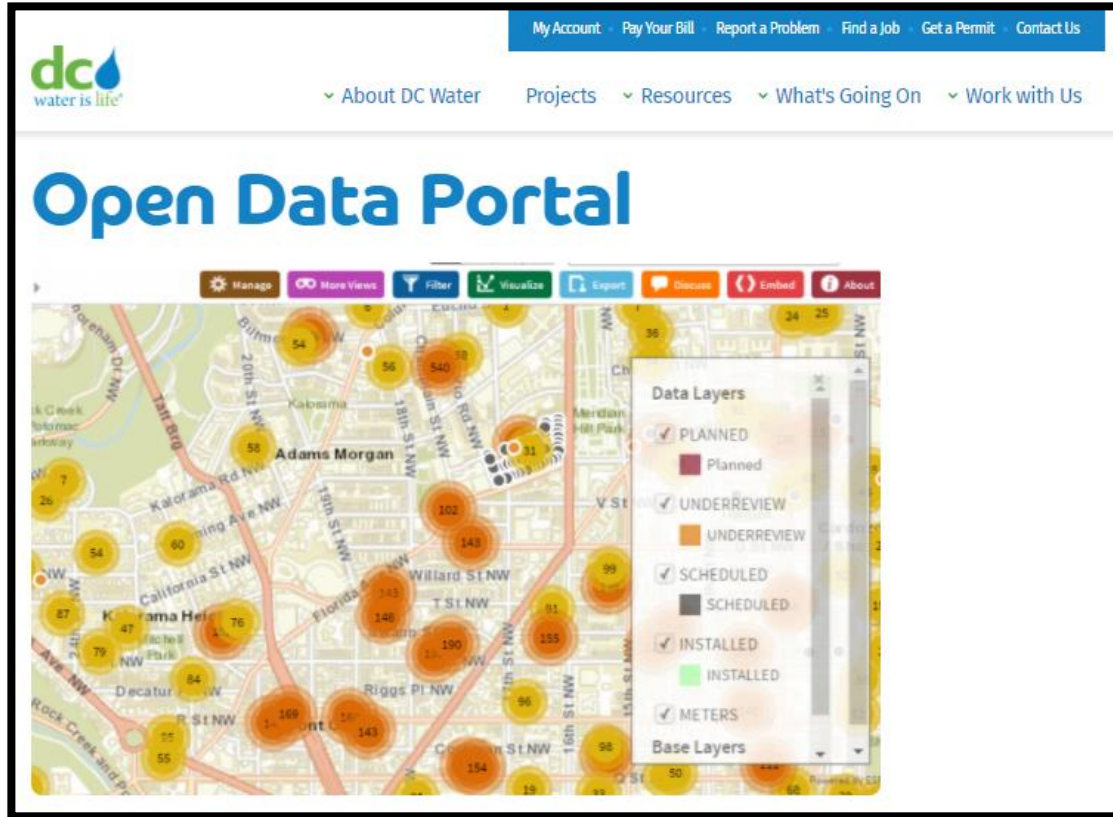
1. The value of open, shared, and integrated water data has not been widely quantified, documented, or communicated
2. Making existing public water data open is a priority
3. The appropriate architecture for an “internet of water” is a federation of data producers, hubs, and users



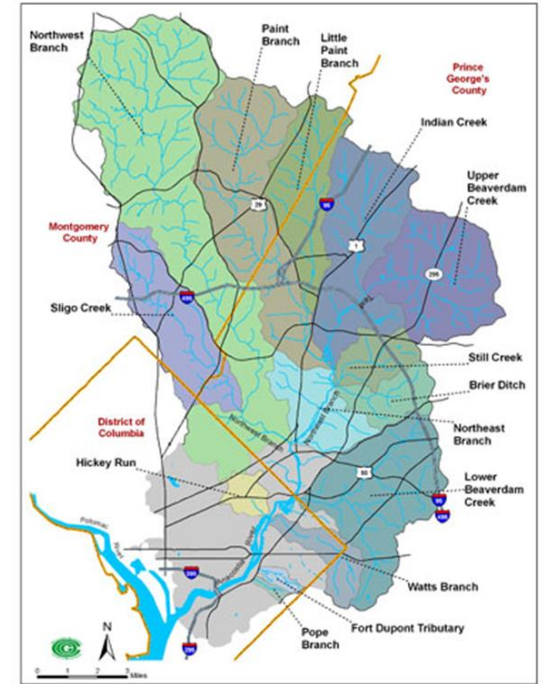
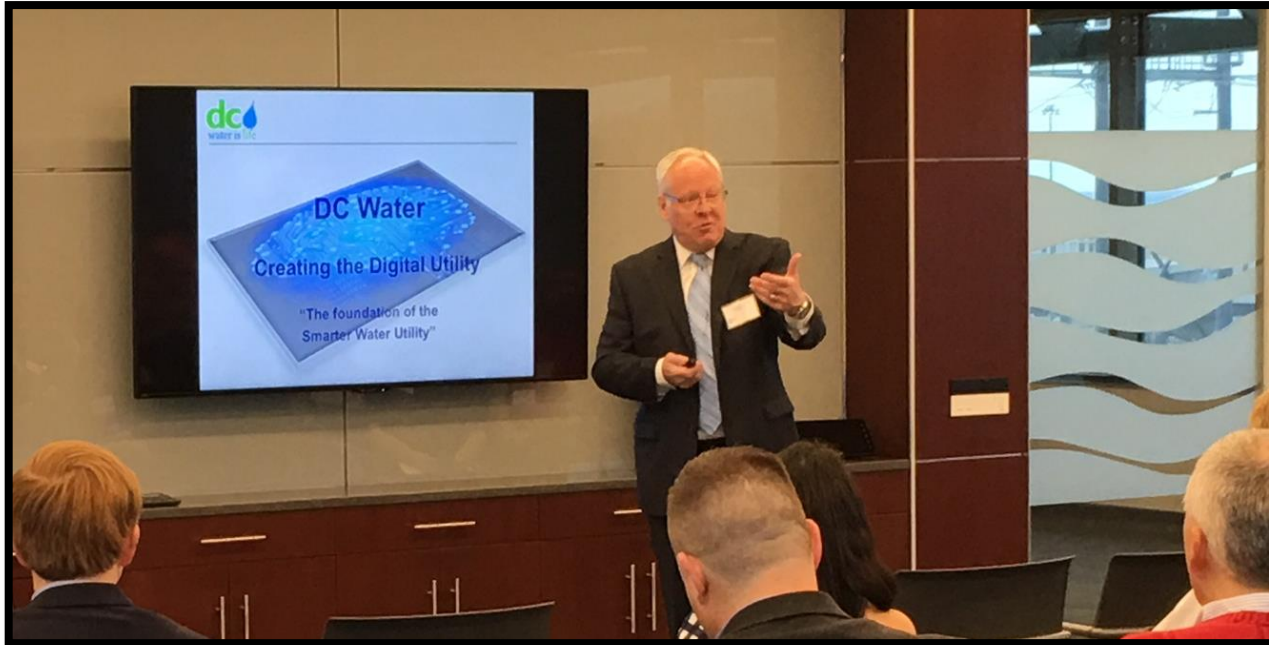
Digital Anacostia



water is life

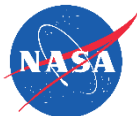
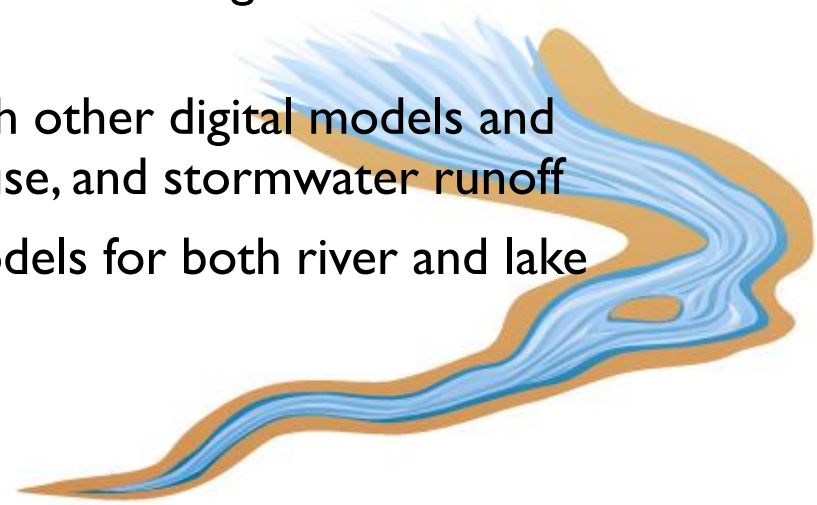


- 💧 **AMR status**
- 💧 **CIP projects**
- 💧 **Hydrant status**
- 💧 **SSOs**
- 💧 **Water main breaks**
- 💧 **Pipe materials**



“IT shifting from answering questions to solving problems-quicker and more efficiently.”

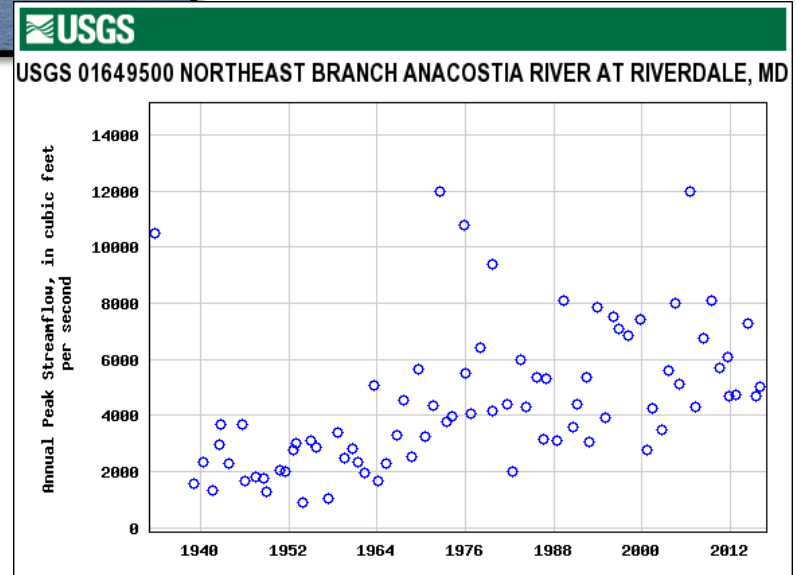
1. **Duplicate closely** the current status of the Anacostia Watershed in a real-time, digital format to establish causal linkages to current stressors
2. **Model and monitor** progress of the watershed improvements achieved by our Clean Rivers Project
3. **Define data density and sufficiency** for water quality modeling and find economical ways of collecting and populating data
4. **Engage** a broad team of stakeholders with a range of complementary capabilities
5. **Connect** a successful digital twin with other digital models and systems of existing infrastructure, land use, and stormwater runoff
6. **Successfully translate** digital models for both river and lake systems



What is a Digital Twin?

A digital twin is a dynamic digital representation of an industrial asset, that enables companies to better understand and predict the performance of their machines and find new revenue streams, and change the way their business operates.

DOWNLOAD



https://nwis.waterdata.usgs.gov/md/nwis/peak?site_no=01649500&agency_cd=USGS&format=img